The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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Export

GREAT BRITAIN, with a population density of 742 persons to the square mile, is one of the most thickly-populated countries in the world. It would be impossible for this country to grow enough food to support itself. It would be equally impossible for it to be self-supporting financially. The standard of living in Great Britain must be as high as that of any country of the world: there may not be the affluence of the wealthy classes of America, but neither is there the same squalour of poverty among the less fortunate. If inquiry be made how this high standard of living is maintained in the face of an exceedingly high population density and in the lack of any outstanding indigenous raw materials except coal, the answer becomes plain to everyone—export trade. Our technologists rank high in any company; our workmen have for generations been renowned for their skill, as our sailors are for their resource and courage in taking our goods and merchandise—and those of other nations—into all the ports of the world. Our bankers have made London the World's clearing house. We make and consume at home large quantities of goods of every kind known to civilisation, but we live by reason of our export trade—visible and invisible. No economist doubts for a moment the importance of this export trade to the well-being of the country in peace and in war. The Government is fully alive to the vital necessity of maintaining this trade even amidst the conflicting claims of a war.

The President of the Board of Trade issued, in March last, a White Paper setting out the aims and plans of the Export Council. This Council is charged with the task of helping to smooth the difficulties that may be encountered in the export market by British industry of all kinds. There are many manufacturers who prefer to cater for the home trade and profess to neglect the export trade. Admittedly, export trade is more trouble; there is less certainty about it; more effort is needed to get it; there are no discriminatory tariffs to keep foreign competitors out of the market, and often the impact of foreign competition in export markets can be very serious, especially when that competition is backed by Government subsidies. It is necessary to have representation abroad, and that leads to greater expense. Nevertheless, the manufacturer who goes out into the export market and trades with our foreign friends is performing a duty to his country that is of the very highest value. Great merchant houses in the City of London have built up far-reaching export connections, so that at one time their fame was known far and wide wherever ships sailed the Seven Seas. The past 20 years have seen foreign nations making the goods required for more and more of their everyday needs in their own countries, and the export houses have wilted and have fallen to some extent from their high estate. These houses probably still have their organisations intact, wanting only the opportunity to set them in motion. It must be our objective to get this export trade working again.

The work of the Export Council must be largely devoted to ensuring that every effort is made to promote the greatest volume of export trade that can be achieved under conditions of war. To achieve this object it must make use of every agency concerned, whether Government Department, manufacturer or exporter. There are a number of well-known hindrances to the export trade, and those who have engaged in this trade, both recently and before the war, know them well. These hindrances are not confined to war time, and we are persuaded that the Government is fully aware of the difficulties and will take what steps may be necessary and appropriate to smooth them out.

It remains for industry to do its part to ensure, so far as possible, that sufficient export trade is obtained, both now and after the war, to enable us not only to live but to maintain our standard of life. Export Groups are being formed; the names and titles of many of these groups have been made public, and there are others in course of formation. The chemical industry is playing its part especially well. Export Trade in chemicals and chemical plant was peculiarly a German preserve at one time, and it is fresh within our knowledge how great was this country's dependence upon Germany before the last war. For the lack of essential chemicals and glassware it was nearly impossible for us to wage that war. Fortunately we are in a very different position to-day, but let it never be forgotten that in peace and war alike a strong chemical industry is essential for this country. That in its turn involves a strong chemical plant industry, the possession of large numbers of highly skilled and experienced chemical engineers and of apparatus makers. The call for chemical plant for home consumption is insufficient to keep in active operation a strong chemical plant industry, and the only way in which this can be done, as Germany has shown us, is by building up an export trade. The chemical industry and the chemical plant industry must work together in this direction. We have already gone a long way towards building up a great chemical export industry; that work needs to be extended and to be consolidated by building up also a great chemical plant export industry.

NOTES AND COMMENTS

A Further Call to Industry

THE utter shamelessness of the Italian declaration of war on Great Britain and France is so obvious as not to need labouring by a trade or technical journal. At the same time the only reason assigned for this act of brigandage against hereditary friends, who have no quarrel whatever with Italy, concerns British finance, industry and commerce very deeply. Mussolini has launched his attack, with its possibilities of untold suffering for his own and other peoples, for loot and for no other purpose. His only word for the decent and peace-loving democracies of the West is that they are plutocratic. He speaks of his people as poor folk arrayed against exploiters, " who fiercely hold on to all the wealth and all the gold of the earth." There is no ideal and indeed no principle at all behind this monstrous attack. The Italians appear in the rôle of a gang of burglars prepared to do their nefarious work with bomb and stiletto. Mussolini, in company with his fellow-gangster, Hitler, makes no concealment of his aim to annihilate British industry, and as a logical consequence to destroy the French and British standards of comfort, and to plunge the Allied nations into irretrievable ruin. Fortunately, British industry has the power no less than the duty to smash this plan to smithereens. By working as they have never worked before, British employers and workpeople in mine, factory and workshop are engaged in a supreme effort, which they will never slacken, to give the Forces of the Crown such a measure of armament and equipment as is bound in the long run to bring defeat and destruction to the authors of possibly the greatest infamy in the history of the world.

Fumigation of Insect Pests

EVERY year insects damage or destroy millions of pounds worth of stored produce, mainly foodstuffs. The ravages of these destructive pests can be prevented to a great extent simply by keeping the warehouses clean. But if the produce or the warehouse is badly infested, it may become necessary to adopt other methods, such as fumigation, to rid them of infestation. Fumigation is a job that must be carried out by experts. The Department of Scientific and Industrial Research has just issued a pamphlet (*The Principles of Fumigation of Insect Pests in Stored Produce,* H.M. Stationery Office, 6d.) describing the scientific principles underlying the successful fumigation of insect pests that infest stored produce. This pamphlet is intended to help the expert to apply the results of the most recent findings of science in this important and practical field. After discussing the varying nature of fumigants and describing suitable apparatus for vaporising these where necessary, graphs are given to show how stirring the air aids the effect distribution of the fumigant. Penetration of the gas into the goods depends on how the produce is stacked, while the nature of the building affects the amount of fumigant which will "cling" or leak away. Suggestions are made for the most effective use of the fumigant, and for ventilation of the building afterwards. Finally, the pamphlet deals with the means for observing the effectiveness of the fumigation in killing the insects in all parts of the building.

Flameproofing in Germany

AS a measure of defence against incendiary bombs, the wooden parts of roofs of many structures in Germany have been impregnated with specially prescribed flameproofing agents, according to a report published by the U.S. Bureau of Foreign and Domestic Commerce. Heretofore, such protective measures have been taken voluntarily by property owners; but now, under newly released regulations issued in a number of cities, it is compulsory for owners to impregnate the roofs of their buildings with flameproofing agents. In the city of Frankfort-on-Main alone the roofs of an additional 50,000 houses and other buildings will be flameproofed by this means as a military measure. Before the war the German Government gave considerable attention to the development of suitable agents for counteracting the effects of incendiary bombs. All such flameproofing materials were subjected to official approval before being admitted to trade. Apart from controlling the types of flameproofing agents offered for sale, the Government also instituted measures for controlling the application of these agents. The most suitable German type of flameproofing agent for wood, fabrics and other materials, is an impregnation solution. Treated combustible material upon coming into contact with flame evolves certain gases which counteract or suffocate other natural gases in the wood. While the impregnation solution prevents actual combustion, it does not prevent charring. However, charring ceases upon withdrawal of the heat. Official data show a gain in German sales of flameproofing materials from 365,000 marks in 1935 to almost 1,600,000 in 1938. Since the outbreak of war further marked gains have been recorded. The gains in sales prior to 1939 were due especially to requirements of an official or military character, and the extension of application on a large scale of flameproofing agents to private dwelling houses will give further impetus to national production of these materials.

Export Groups Formed

Scientific Instrument Makers

UNDER the auspices of the Scientific Instrument Manufacturers' Association of Great Britain, Ltd., a meeting has been held to form an Export Group for the Scientific Instrument Trade. A representative exploratory committee was appointed which agreed with the Export Council the exact scope of the Group in consultation with kindred Groups and other interested Associations. The Group formed received recognition by the Export Council under the style " Scientific Instruments and Appliances Export Group." Some thirty firms have joined; and others interested can obtain particulars on application to the Secretary at 60 Queen Victoria Street, E.C.4.

The Chairman of the Group is Mr. M. W. Zambra, and the Secretary, Mr. A. M. Bown. An Executive Committee will be appointed.

Plastics Groups

At a recent meeting of the British Plastics Federation, Ltd., two export groups were inaugurated. Full particulars can be obtained regarding both groups from the Secretary at 11/12 Pall Mall, London, S.W.1. The groups and their officers are as follows:

(a) Moulding Powder Manufacturers' Export Group: Chairman, Mr. Kenneth M. Chance (The Beetle Products Co., Ltd.); secretary, Mr. Gilbert T. Beach.

(b) Moulders' Export Group: Chairman, Mr. Herbert Bridge (Thos. De La Rue and Co., Ltd.); executive committee, Mr. G. F. Bassett (Ashdowns, Ltd.), Mr. Kenneth M. Chance (Streetly Mfg. Co., Ltd.), Mr. R. R. Todd (Birkbys, Ltd.), and Mr. S. Wiseman (Stadium, Ltd.); secretary, Mr. Gilbert T. Beach. A liaison committee has been appointed to co-ordinate the activities of these two Groups with Mr. Kenneth M. Chance as Chairman.

RECOVERY OF BY-PRODUCT AMMONIA

A Question of Economics and Technique

IN the series of papers recently presented to the Institution of Gas Engineers, none is more generally interesting to industrial chemists than that entitled "Observations on the Economics of By-Products Recovery in Gas Works," by D. M. Henshaw and C. Cooper, respectively managing director and secretary of W. C. Holmes and Co., Ltd. The paper consists mainly of a description of developments which have taken place in the operations involved in the purification of crude coal gas produced under modern carbonising conditions, and of certain economies which may be effected in carrying out such operations. Data and costs which are referred to are drawn from records of working results met with by the authors in the course of their experience as plant designers, and the work of other investigators, of which due acknowledgment is made in an appendix.

Space does not permit the inclusion here of more than an extract from this valuable contribution to chemical literature, and at the present time, both from the economic and from the general chemical point of view, the section on ammonia recovery would seem to be of the most universal interest.

The removal of ammonia takes place in two main stages. The first is that incidental to cooling, wherein much of the ammonia is dissolved in the condensed water, and the second is the more deliberately designed solution of the remainder of the ammonia in water to give a final removal of about 99 per cent.

The distribution of the ammonia between these two stages offers one of the contrasts between the extremes of the gas practice of the candle-power era and that of the most extended makes of the present day. In the former case it was possible to recover economically all the ammonia in a solution of total water less than 10 per cent. of the weight of the original coal. There was less water condensate, therefore a strong virgin liquor, most of the ammonia remained in the gas after cooling, and the gas volume was small. In the opposite case, the water condensate is copious, owing to the presence of undecomposed steam from that admitted to the retort; it absorbs much of the ammonia as a dilute solution, and leaves a smaller residuum in a larger volume of gas. Although the latter case is not universal, it is almost a representative one.

Toxic Materials in Ammonia Liquors

The status of recovery of ammonia is reverting to that of the elimination of an impurity, and the realisation of positive revenue from dilute ammonia liquors is increasingly difficult, because of the recent reduced values of ammonia products when put into marketable form. A further matter to be noted is that liquors from steamed vertical retorts contain relatively greater quantities of toxic materials, which are not eliminated in the distillation of the liquor before its discharge as a waste product.

In view of these changes it is not surprising that in many works the complete rejection of the ammoniacal liquor as made would be counted as the most economical method of disposal, if penalties could be avoided. Such a state of affairs is a challenge to chemical engineers, either to reduce the difficulties of collection of the ammonia or to devise means for its more economical recovery and purification.

The fixation of ammonia for its better storage, transport and utilisation is still nearly always by conversion to sulphate, either at producer's works or at central purchasing stations. There is, of course, a second connection with sulphuric acid, in that most spent oxide from purifiers realises its value by sale for acid making. This reciprocal trade is adversely affected by any ammonia which does not find its way into combination with "oxide-produced" acid, and it is probable that, at any rate in times of normal production, this trend will continue. If ammonia cannot be disposed of in normal trade, a slight depreciation of the oxide market will not be likely to bring sulphate manufacture back to the gas works.

Methods have been described by T. H. Prater for the destruction of ammonia in gas retorts. A large-scale experiment on the basis of Br. Pats. 356,283 and 360,174 (Hodsman, H. J., and Taylor, A.) and 377,959 (W. C. Holmes and Co., Ltd., and Hodsman, H. J.) has been carried out for its conversion chiefly to sulphate by the exposure of ammonia solutions to flue gases containing sulphur dioxide. This experiment also demonstrated the extent to which the actual bulk of weak liquor could be evaporated into the chimney gases by waste heat. Briefly, the results are that in the majority of works any reasonable make of liquor could be disposed of, and the product could be either substantially sulphate of ammonia, a solid mixture of salts of ammonia, sulphate predominating, or a highly concentrated solution of these salts. The fertiliser value of the latter compounds was not noticeably inferior to that of an equivalent weight of ammonia in sulphate form. The process required a very complete oxidation of the first compounds formed, chiefly sulphite, to avoid loss of ammonia from the heated solution. This oxidation was readily obtained when the source of ammonia was relatively pure, *e.g.*, crude concentrated liquor, but it was interfered with, when using crude liquor only, by the organic impurities such as phenols, which acted inhibitively.

Sulphuric Acid Exchange Process

In another series of experiments, on the same lines, on the basis of Br. Pat. 437,278 (Lessing, R.), the exchange of sulphuric acid was carried out by lime. Calcium sulphate was produced by the reaction of chalk and flue gases completed under oxidising conditions, and the calcium sulphate was submitted to double decomposition in an ammonia washer, with ammonium carbonate in the form of the ammonia and CO_2 from the gas. This process is free from the tendency to make compounds other than sulphate, but is not directly applicable to liquors. Ammonia has to be distilled to make it available.

The employment of these processes is simply a question of cost and revenue as against current methods of fixation, and one can imagine circumstances arising which would justify their development into gasworks operations. An obstacle that might require to be overcome would be the appearance of nitrogenous fertiliser under possibly an unfamiliar guise. This latter point arises also in connection with the process sponsored by The Institution of Gas Engineers, for the conversion of all or part of the ammonia into bicarbonate. While this method does not appear to have been adopted commercially, it is one which, as in the two cases previously cited, might receive a strong stimulus under conditions of restriction of acid supplies.

The process of crude liquor concentration, whilst having local application where a centralised purchaser exists, and where the immediate disposal of the effluent is permissible, does not give a complete solution to all undertakings. The more refined process of making industrially pure ammonia has an even more restricted application. It offers a new field in one respect, however, in that ammonia in this form is convertible to nitric acid, a possible alternative fixation of nitrogen which has not had much attention from by-product ammonia producers.

There is no apparent limit to the alternatives which may be proposed for the disposal of gas-works ammonia. The position has for many years been simply that costs of successive processes have been too high to fit in with the diminishing perspective of market prices, at any rate for the small and medium producer.

NOTES FROM WORKS SAFETY JOTTINGS

The Intelligent Use of Safety Devices

by JOHN CREEVEY

THE selection of the right personnel plays a great part in attaining the highest degree of safety in the operation of chemical plant. Measures adopted can be enforced rigidly, but to little real effect if a man is commonly negligent or forgetful, or too confident in the matter of doing everything according to rule. In like manner the installation of safety devices and control instruments does not mean that intelligence on the part of the personnel can be entirely dispensed with. Control instruments have their particular purpose, and also their limitations, which vary in accordance with design and efficiency of operation; likewise the safety devices. Assuming that they are tested at regular intervals there is little risk of ineffective operation if the make is a recognised one for reliability. But where a number of instruments and devices are installed and are not arranged to respond collectively to fluctuations in the process variables, there must necessarily be a certain recognised standard of intelligence and initiative for keeping a check on changes that may occur and making alterations accordingly. The extent to which a change in two or more variables collectively tends to give dangerous conditions, either immediate or of secondary nature, naturally depends upon the process in use. The element of dangerous conditions may be entirely absent; nevertheless, the possibility must not be overlooked. Temperature and pressure are not always the most important; rate of flow for one of the materials entering the process, or a gradual change in concentration, acidity or alkalinity, may be of minor consequence by itself, but far different in conjunction with an unexpected change in some other variable.

* * *

The general trend for increasing output has been mainly responsible for the wide adoption of devices to keep process variables within certain defined limits. Intermittent processes have given place to continuous processes, and an opening has thereby been created for truly automatic and semi-automatic devices to allow the process to become continuous with the minimum of direct attention from those operating the plant. If the flow of material is exceptionally rapid there is great need for the installation of automatic control and also of safety devices to offset any change that may come about. Sometimes even a slight variation of temperature or pressure may have important effects on the quality of the product, and generally the instrument is able to detect this more quickly than the man in charge of the plant. This is also an aspect of safety—safety considered from the economic aspect as distinct from the avoidance of hazardous conditions or actual accidents. Both aspects are related, for the unwarranted production of material which is off-standard, with the consequent de-grading of a larger batch, can easily bring temporary deviations in the smooth running of part of the works which may need an extra watchful eye upon safety measures owing to temporary changes in routine or a speeding-up or slowing-down of some dependent process.

* * *

The frequency of inspection for measuring and recording instruments can be left to the discretion of the makers. For preference a servicing contract should be made, for testing at regular intervals *in situ* and making any necessary adjustments to maintain the desired standard of accuracy and responsiveness. If this work is to be done by a member of the works staff, care must be taken that the person is fully qualified, for the consequence of tampering by an inexperienced person cannot be treated too lightly in the aspects of safety. For this reason the removal of charts from the instruments about the works is preferably left to one person qualified for this duty rather than to anyone who may be keeping an eye upon what variables are being indicated or recorded. Charts, too, are made with a purpose in view; they should be examined and compared at regular intervals so that any variations may be noted as speedily as possible and investigated as to the cause and effect.

* * *

The number of processes that run more smoothly for a better knowledge of *p*H values is daily increasing. As a measure of keeping these values at the optimum, their measurement and control has become especially desirable. For this purpose electrical recording instruments working on the potentiometric principle are available, and can be arranged to control a valve by way of which a particular solution enters the process. Constant conditions of *p*H do much to keep the process smooth-running and give uniform quality for the product, but there is additional value—not always realised—in the attainment of greater safety where *p*H is but one of many variables that can affect the process.

* * *

Men engaged in operating chemical plant must be conversant with the nature of the materials that enter into the process as well as with the technicalities of the plant itself. This is an apparently self-obvious statement, for materials, process and plant are all intimately connected. Nevertheless, it can be noticed that safety in the matter of storage and handling of materials entering the process is not always at its highest so long as the process itself continues to run in a smooth manner. Cleanliness about the plant is equally important, especially where residues or quantities of waste material have to be removed. The unnecessary accumulation of wastes or residues from day to day does not promote a healthy appearance on the plant and its precincts, and may easily breed carelessness in other matters on which the efficient operation and general safety of the plant and process depend. Because a process is superficially dirty it is not necessary for the accessory features to be in keeping, unless this is unavoidable. Neither is there need for accessory equipment to be left lying about in unmethodical manner when not actually in use, for in this practice minor hazards are ever present. Many common accidents are not suffered by the person primarily responsible for conditions giving an accident-promoting atmosphere; it is more often someone else who has business to be present.

* * *

Faults in smooth running need to be observed as soon as can be, and duly reported. There are many things that need to be watched subconsciously in addition to the supply of steam, water for cooling purposes, and electricity. To mention a few of them, there is the sticking of valves, slackness or signs of wear on belts for power transmission, minor leakage at flanges or screwed joints, and corrosion hitherto unnoticed upon pipework. All of these things may give rise to a serious accident, just when unexpected. It is equally important to see whether any suspicion of escaping gas or vapour can be confirmed, when undue exertion or breathing trouble is noticed without apparent cause. Dizziness at the end of the shift should not be attributed merely to physical fatigue. Bad conditions of ventilation, of course, may be responsible—but they are equally a matter that needs attention from a general safety aspect. Bad ventilation can always be corrected, and the presence of chemicals makes it needful to do so when once noticed.

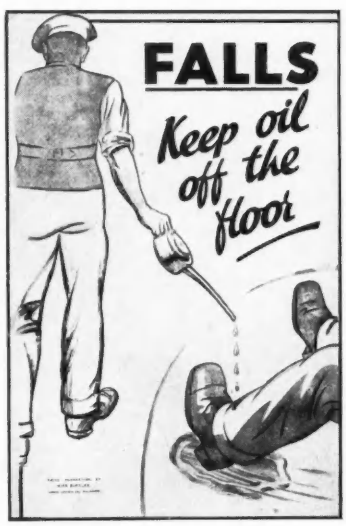
HEADING THE LIST of 61 new companies registered in Palestine in April is Galam, Ltd. (manufacturers of glucose and starch) with a £25,000 share capital.

SAFETY POSTERS

An Aid in the Works Safety Campaign

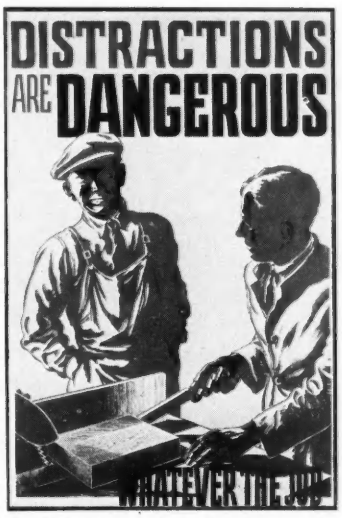
IN peace time a million and a half British factory workers see a new safety poster regularly every week. This is out of a total of about six million employed. Though the war must have affected these actual figures, the proportions are probably about the same to-day. This wide popularity of posters, as a means of safety education, is undoubtedly due to the fact that they are the simplest way of helping to maintain employees in a state of awareness about the need for safety. Within limits they can also instruct about hazards and about the best ways of avoiding or preventing them.

The simplest type of poster is that which makes a general appeal by means of some pithy phrase and an attractive lay-out. Its aim is simply to *remind*. Examples are: "The wife of a careless man is almost a widow," "Avoid your first accident and you won't have a second." In the United States extensive use is made of another version of the same type of poster. It may be called the "appeal to sentiment." Father is pictured leaving his home to go to work. He is saying good-bye to his family; the toddler calls "Come home safe, Daddy," or something equally appropriate—and unlikely from one of such tender years. The Americans know their business very well and such posters are evidently popular and effective in the U.S.A. They have never been tried over here.



There is also the instructive poster which aims at teaching an actual lesson or at reminding about a particular hazard. Examples are those dealing with safe methods of handling goods, correct use of ladders, goggles and safety devices, or with the hazards of machinery, chemicals and untidiness. Both the posters illustrated are in the "instructive" class though the one about distraction is not so precise in its subject matter as some that can be produced on other hazards.

The National Safety First Association, 52 Grosvenor Gardens, London, S.W.1, which issues some fifty new designs every year in conjunction with the Industrial Welfare Society, has evolved some basic principles for the design of safety posters as the result of some twenty years' experience. They may be summarised briefly as follows:—



1. Reduce the subject matter to a single, simple lesson.

2. Keep the wording to an absolute minimum.

3. Avoid negatives. Say "Stand from under suspended loads" rather than "Don't walk under suspended loads."

4. Avoid the gruesome. Nine times out of ten it creates a resistance in the mind of the beholder. The tenth time it may be justified because it pictures a serious result which could not easily be visualised, and therefore realised, by an ordinary person.

5. Over-cleverness is a worse sin than over-simplicity. The aim is to be understood at a glance.

Though there is not one of these principles which is not deliberately broken on occasion, they apply to the bulk of poster subjects. If they are flouted it must be with good reasons.

For all its usefulness and simplicity the poster has its limitations. It is not, as some might like to think, a safety campaign in itself, but used by a keen management in a well protected factory and in conjunction with an adequate safety organisation its effectiveness may be considered to be proved by its popularity. There is not an industrial country in the world which has not its safety posters. There are, however, very few countries, other than Great Britain, in which it is possible to display an absolutely new safety poster every week, year after year.

Chemical Matters in Parliament

Organisation of Research

IN the House of Commons last week Mr. Stokes asked the Minister of Supply what steps he proposed to take in order to organise the research workers of the country and indicate to them in their various localities the kind of research which was most needed in order to help the national effort.

Mr. H. Morrison replied that comprehensive steps had already been taken to organise the national research effort. The chief research agencies' activities were closely co-ordinated for the production of all the requisites for National Defence, and there was pooling of effort between them in a vast range of subjects. In addition a large volume of systematic work was being carried on at universities and in industrial laboratories, of which the utmost possible advantage had been taken by those responsible for the organisation of research in the departments concerned. The response given by all those concerned had been most gratifying in spirit and productive in result.

Mr. Stokes further asked if Mr. Morrison was aware that in one of the greatest universities in this country more than 200 research workers, many of them of the first order in their particular fields, had not been approached in this matter at all.

In reply Mr. Morrison said that he could only say that, if additional research was needed and there were research workers available, he would certainly give consideration to utilising their services. On the other hand, he would be averse to the utilisation of research beyond what was necessary in the public interest, because that would be a waste of labour.

PRELIMINARY STATISTICS of the United States trade with France in the year 1939 show a 13 per cent. decline, to $5,055,000, in imports into the United States of the group "chemicals and related products"; exports of the group, however, declined only one per cent. to $5,107,000.

A Chemist's Bookshelf

NON-FERROUS FOUNDRY PRACTICE, by J. Laing and R. T. Rolfe. London: Chapman & Hall. Pp. vii and 336. 21s.

Books on foundry practice are not very numerous, and those dealing with non-ferrous practice are still more scantily represented. This book will be most useful for those who are seeking within the covers of one volume a full account of the technique essential for the successful production of castings in the chief non-ferrous alloys comprising the various brasses and bronzes, and aluminium and magnesium alloys, which are of special interest for the armament and aircraft industries. Considerable attention is paid to sands, alloying and melting, and gating and running, which are illustrated by many diagrams. A special feature of the book concerns the effects of additions and impurities and the uses of the different alloys for special duties. This concise survey of the chief non-ferrous alloys will be welcomed by every metallurgist and foundry man and it will also be most useful to the engineer and designer, particularly in furnishing the necessary information on the comparative merits of alternative materials available for special purposes.

A NEW DICTIONARY OF CHEMISTRY, edited by Stephen Miall. London: Longmans. Pp. xv and 575. 42s.

A comprehensive dictionary of chemistry in one volume is a valuable addition to works libraries and other such institutions where economy of space and money precludes the use of the many-volumed dictionaries on the subject. Dr. Miall, with the assistance of many eminent chemists, has provided such a volume, and the information which it contains is really comprehensive, particularly on the organic side. Short biographies of eminent chemists are included, and a table of physical constants of many organic compounds is added by way of appendix. In so valuable a volume it is a pity that there should be signs here and there of hasty proof-reading, and there is a repeated misconception of the way to spell the element praseodymium.

CALCULATIONS OF QUANTITATIVE ANALYSIS, by Carl J. Engelder, Ph.D. London: Chapman & Hall. Pp. viii and 174. 12s.

The author, Professor of Analytical Chemistry at the University of Pittsburgh, who has already issued seven very useful books on analysis through the same publishers, deals in this book with the theory and technique used in quantitative analysis. It is divided into four parts. Part I covers introductory considerations, arithmetical operations and reagents in general. Parts II and III cover volumetric and gravimetric calculations respectively. If gravimetric technique is to be introduced in the laboratory before volumetric, the problem sets of Part III will be found to be designed for this independent approach, though the author has followed the prevailing practice of introducing volumetric work before gravimetric. Part IV concludes with the applications that are made of analytical data. Some 300 examples and problems are given and 24 tables facilitate their solution.

BREWING: SCIENCE AND PRACTICE, by H. Lloyd Hind. Vol. II. Brewing Processes. London: Chapman & Hall. Pp. xiv and 514. 56s.

In the period of about eighteen months that has elapsed since the appearance of Vol. I of this encyclopædic work on brewing, scientific investigations have had such far-reaching and fundamental effects on the subject that the scheme of the work has been recast, and the chapters on bottling have had to be held over until the forthcoming third volume, which is already in an advanced stage of preparation. The present volume will, of course, be of the greatest practical value to the brewers themselves, but the whole process of brewing is of such manifold interest that many of its aspects contain a special appeal to industrial and other chemists whose main preoccupation may lie in different directions. In the chapter on Brewery Equipment, for example, the section dealing with air filtration contains observations of wide application to other branches of chemical manufacture. The problem of starch conversion, too, which is fully dealt with in a separate section, is of special interest to all concerned in the chemistry of sugars, dextrins and the like, and in enzyme action. Yet again, Dr. Shimwell's admirably clear exposition of the action of bacteria in brewing offers valuable material to the biochemist and microbiologist. Sections on fermentation and on air and biological stability raise yet a further series of problems, the discussion of which is of high importance to industrial chemistry in general. A special word should be said in commendation of the excellent choice of illustrations, which are both copious and clear.

THERMODYNAMICS FOR CHEMICAL ENGINEERS, by Professor Harold C. Weber. London: Chapman & Hall. Pp. 264. 19s. 6d.

It is a little difficult in the earlier stages of this book to distinguish between the thermodynamics of chemical engineering and a somewhat superficial treatment of classical physical chemistry. This is, when one comes to think of it, a compliment to the author's ability to make the initially terrifying abstruseness of thermodynamics apparently simple to the student. The student will be led to exclaim that there is nothing in this book with which he is not already familiar from his earlier courses. He is, however, brought before long to recognise that certain concepts foreign to physical chemistry and belonging properly to thermodynamics are introduced and he will begin to appreciate their significance. It is perhaps a weakness of the book that there is no bridge between the theoretical treatment of the subject and its practical application. The reader is led by easy stages through an entirely simple statement of theoretical principles in which the mathematics required of him are of the simplest; then he is faced with a formidable-looking list of practical questions which he has to work out, not even the answers being provided. We would suggest that in future editions there should be a good selection of worked examples, or, even better from the point of view of the student ploughing a lonely furrow, that an appendix should be added in which the complete working of these questions is given. The book can be recommended as an excellent introduction to the subject, needing but the bridge between theory and practice to be very excellent indeed.

A REVIEW OF DRIERS AND DRYING, by E. F. Bennett. London: Paint Technology. Pp. 106. 3s. 6d.

Though this is a small volume (and, incidentally, convenient to handle on that account) Dr. Long's opinion in the foreword that it is a particularly complete and suggestive compilation of the information on the subject which it covers does not appear exaggerated. Being a "Paint Library" book, it will appeal specially to the paint and varnish chemist, but the chemistry of film formation is a matter of interest to many others as well. The explanation of the physical and chemical reasons for the action of drying oils is greatly assisted by a quantity of simple diagrams, and the properties imparted by the several metal driers are clearly distinguished. The author is commendably undogmatic, but while leaving it quite clear that there is much more to be learnt about the mechanism of drying, he gives just due to the researches that have led to the discovery of much fundamental knowledge of the subject.

TESTS ON THE LIQUEFACTION OF CANADIAN COALS BY HYDROGENATION, by T. E. Warren and K. W. Bowles. Ottawa, Department of Mines and Resources. Pp. 106. 25 cents.

In this report are presented the results of hydrogenation on a series of coals of varying rank, from widely separated districts from which more than 60 per cent. of Canada's coal output is produced. A sample of coal processed in the I.C.I. hydrogenation plant at Billingham has been included as a standard of comparison.

Wood in the Chemical Industry

Its Use for Storage Purposes — Methods of Impregnation

NOWADAYS, when the investigation of every source of material is a question of vital importance, an article by Dr. R. Quarendon, in *Wood* (May, 1940, pp. 115-7), on "Wood in the Chemical Industry," is of special interest. Wood, he writes, serves the chemical industry now as it has done for the last 200 years, and there is little doubt that it will go on doing so. Cheapness and lightness apart, a wooden structure adapts itself so readily to circumstances that it is often the only solution to a problem; and a long tradition of craftsmanship in the making of wooden storage vessels is a valuable adjunct to their use.

Storage vessels are one of the most important forms of timber chemical plant. Weak acids can, in general, be handled without trouble even at boiling point. It is the caustic alkalis and the very strong acids that cause trouble, through attacking either the cellulose or the lignin and impairing the mechanical strength of the wood (*e.g.*, oxidation of the cellulose by strong sulphuric or nitric acid to form oxycellulose). Generally speaking, apart from teak, hardwoods are not equal to softwoods in chemical work; Californian redwood, pitch pine, and red cypress are highly suitable for chemical vats and tanks. The development of teak for industrial plant has doubtless been retarded mainly by its high cost.

Overcoming Porosity

The chief defect of wood as a chemical plant material is, of course, its porosity, and attempts have been made in several ways to overcome it. Protective coatings are heavy, expensive, and subject to mechanical damage; heavy waxing is satisfactory in low-temperature conditions; but the method that has recently been finding wide fields of application is that of impregnation, the most important agents being artificial resin and plasticised sulphur. Both reduce the amount of water absorbed by the wood to negligible amounts and both increase the mechanical strength and chemical resistance to a high degree.

In the production of impregnated wood, the moisture content of the wood is first reduced to a low figure. This is done by submitting the air-dried wood to a pressure lower than atmospheric, thus removing most of the water. The wood, which is usually beech, is then placed in an autoclave at a temperature of 130° C. in contact with phenol-formaldehyde dissolved in spirit. Further resin formation takes place in the pores of the wood, which, after curing and surface treatment, is ready for use. Laboratory experiments reveal a considerable resistance of impregnated wood to some chemicals which cause a most marked disintegration of wood alone. Quite strong sulphuric acid and weak alkali, for example, and hydrochloric acid vapour are cases in point. Plasticised sulphur is sulphur which has been mixed with a suitable compound and thereby made pliable instead of brittle. It keeps this condition indefinitely. Wood immersed in this modified sulphur at about 140° C. acquires a remarkable resistance to corrosion and biological attack, and decay.

A pair of pressure vats in pitch pine, constructed by Carty and Son, Ltd., London.

Moisture penetration is also much reduced. The strength of ash wood increased from about 9500 to 33,000 lb. per sq. in. after this treatment, while that of maple increased from 17,000 to 33,000 lb. per sq. in. Wood impregnated in this way has been used successfully for corrosive liquids such as hydrochloric and sulphuric acids, for strong solutions of other chemical substances, and for ducts carrying acid fumes.

Chemical manufacturers relying on wood in one way or another include the dye, paint, soap, and artificial silk industries; the production of paper, ink, photographic materials, and disinfectants; laundering, tanning, and leather-dressing; and the bright-dipping and descaling of metal parts.

British Chemical Prices

Market Reports

TRADE continues to be fairly active in most sections of the general chemical market, chief interest being displayed in spot or near delivery transactions. The movement of chemicals required in the textile and tanning industries has covered good volumes, and buyers, generally, are calling for prompt delivery of existing contract commitments. Taking the market as a whole conditions are very steady with firm quotations in evidence in almost all sections. A number of items, particularly those for which we depend on overseas sources of supply, continue scarce although not in any direction is the shortage regarded as acute. A steady to firm tone prevails in the market for coal tar products, buying interest this week being fairly active and spread over most sections. Carbolic acid, pitch, pyridine and toluol are items for which there is a fair request and values throughout the market remain steady.

MANCHESTER.—The latest developments in the European war situation do not appear to have had much influence on trading conditions on the Manchester chemical market during the past week. Fresh inquiry has been on fairly active lines and there has been no falling away in the demand for materials against contracts, especially in the case of the textile and the leather and rubber trades. Values continue firm pretty well throughout the range. In the case of the light tar distillates the general movement into consumption has been brisk and prices are strong.

GLASGOW.—As expected, inquiries in Scotland for heavy chemicals are coming in steadily, with a fair amount of business accruing. This steadiness will no doubt be sustained now the Government appeal to War Industries has had full effect. Prices are being well maintained.

Price Changes

Creosote.—MANCHESTER: 5d. to 7d. per gal.

Pyridine.—90/140°, 20s. to 25s. per gal.; 90/160°, 18s. 6d. to 19s. 6d.; 90/180°, 4s. to 5s. per gal., f.o.b. MANCHESTER: 19s. to 22s. 6d. per gal.

Oil Prices

Turpentine.—HULL: American turpentine, spot, 54s. 6d. per cwt. in barrels, ex store.

Personal Notes

MR. ARTHUR L. BEDINGFIELD has been appointed chief chemist to Alexander Pirie and Sons, Ltd., and to Wiggins Teape and Co. (1919), Ltd.

* * * *

MR. W. DEACON was re-elected president of the Council of the Pharmaceutical Society at the June meeting. MR. F. G. WELLS was appointed vice-president and MR. H. W. WALLIS treasurer.

* * * *

MR. J. DAVIDSON PRATT has been appointed an additional Deputy Director-General for Chemical Research, Experiment and Development in the Ministry of Supply. He has been connected with research and development in chemical defence

Mr. J. Davidson Pratt.

for the War Office since 1916, but largely relinquished this work in 1928 on being appointed general manager of the Association of British Chemical Manufacturers, who have now agreed to second him for his present appointment.

OBITUARY

MR. OLIVER GATTY, one of the most brilliant of the younger school of scientific research in this country, died last week at Cambridge, aged 32, after an accident while he was engaged on research in the national service. Mr. Gatty was educated at Winchester and Oxford, where he took first-class honours in chemistry in 1930. He had worked at Rothamsted and on the 1933 Spitzbergen expedition, as well as at both Oxford and Cambridge. He was specially able in physical chemistry, and his work on thermodynamics and the chemistry of surfaces was outstanding.

* * * *

SIR JOCELYN FIELD THORPE, whose death last Monday at Cooden Beach, Sussex, at the age of 67, is announced, was one of the most distinguished figures in this country in the world of organic chemistry, especially in the provinces of dyestuffs and explosives. His name was familiar to a very wide circle of chemists and others, by virtue of his editorial work on *Thorpe's Dictionary of Applied Chemistry*, a fourth edition of which is now appearing—indeed, the fourth volume of this edition was actually published on the day of its chief editor's death. Thorpe had been the guide and friend of many generations at the Universities of Manchester and London. Educated at King's College, London, the Royal College of Science and Heidelberg University, he began his teaching career as a research fellow at Owens College, Manchester, in 1895 and went on to be principal lecturer in biochemistry at Manchester University in 1908-10. From 1914 to 1938 he was Professor of Organic Chemistry in the University of London, filling meanwhile many important official positions. He served on the advisory council of the D.S.I.R. in 1916-22 and on the Dyestuffs Development Committee in 1925-34; he was

Sir Jocelyn Thorpe.

a member of the Chemical Defence Committee and the Safety in Mines Research Board, and chairman of the Explosives in Mines Committee. In the course of his distinguished career many honours fell to his share: he was D.Sc. of Manchester University, F.R.S. (1908), and Fellow of King's College, London (1912); he was awarded the Longstaff Medal of the Chemical Society in 1921 and the Davy Medal of the Royal Society in 1922. In 1923-25 he was member of the council of the Royal Society, and he held office as President of the Chemical Society in 1928-31 and of the Institute of Chemistry in 1933-36. His services to the nation were recognised by the award of the C.B.E. in 1917 and of a knighthood last year, and he was an Officier de la Légion d'Honneur. Apart from his great work on the famous Dictionary, he published several volumes on Synthetic Dyestuffs and Vat Colours, and on Organic Chemistry. His death while still in the prime of his intellectual powers is a great loss to chemistry and to the nation.

New Control Orders

Trichlorethylene

THE Board of Trade has made an Order, the Export of Goods (Control) (No. 15) Order, 1940, under which a licence is now required to export trichlorethylene to any destination from June 10.

Sodium Nitrate

The Treasury has issued the Import Duties (Exemptions) (No. 6) Order, 1940, which exempts from import duty sodium nitrate (other than synthetic). The Order came into operation on June 12.

General Import Licence

The Board of Trade has made an Order, the Import of Goods (Control) Order, 1940, dated June 4, in which all goods except live quadruped animals imported into the United Kingdom are subject to import licensing from June 10 (subject, however, to the provisions of any open general licence issued by the Board of Trade). Goods covered by the Order not hitherto subject to import licensing which are proved to the satisfaction of the Commissioners of Customs and Excise to have been despatched to the United Kingdom before June 10 and are imported into the United Kingdom before August 10 will not require a licence.

General News——From Week to Week

O-ANISIDINE, *o*-phenetidine and *o*- and *p*-chlornitrobenzol have been exempted until June 30 from Key Industry Duty.

THE EMERGENCY ADDRESS of the Union Oxide and Chemical Co., Ltd., of Plantation House, Fenchurch Street, London, E.C.3, is now The Old Vicarage, Flitton, Bedfordshire (telephone, Silsoe 304/5).

TO AVOID INTERRUPTING THE IMPORTANT WORK of "key" technicians the luncheon of the Institution of Automobile Engineers and the dinner of the Society of Chemical Industry, which were to have been held at Grosvenor House on June 21 and July 9 respectively, have been cancelled.

GLASGOW CORPORATION is inviting tenders for the supply, delivery and erection at Dawsholm Gasworks, Glasgow, of a benzol extraction plant. Specifications, drawings and form of tender may be obtained from the Engineer's Office, Gas Department, 30 John Street, Glasgow, offers to be lodged with Mr. William Kerr, Town Clerk, City Chambers, Glasgow, not later than June 24.

AT THE ANNUAL MEETING of the Institute of Physics the following were elected to take office on October 1: President, Professor W. L. Bragg; vice-president, Dr. B. A. Keen; hon. treasurer, Major C. E. S. Phillips; hon. secretary, Professor J. A. Crowther; new members of the board, Professor E. A. Owen and Dr. C. Sykes, Professor G. I. Finch (appointed by the Physical Society) and Dr. R. W. Lunt (appointed by the Faraday Society).

THE NATIONAL EFFORT EXHIBITION, opened in Manchester by Lord Derby last week, provides striking evidence of the manner in which the nation is now speeding up its drive for victory—and how local authorities are co-operating. A special section, devoted to the activities of the City of Manchester Gas Department, includes a display of the by-products of gas-making which are key war materials; of special interest are shells showing the improved quality made possible by heat-treatment by gas.

AMONG OCCUPATIONS affected by recent alterations in the Schedule of Reserved Occupations are enamellers, both vitreous and non-vitreous, whose age of reservation is raised from 25 to 30 with effect from August 1, 1940. In the case of several catagories in the artificial manure and fertiliser manufacture industries the age of reservation is lowered with immediate effect from 30 to 25. New entries in the schedule, to take effect immediately, are patent agents at 30 and patent agents' technical assistants at 30.

Foreign News

IN THE PRESSURE HYDROGENATION of benzaldehyde to toluene a yield of 70 per cent. was obtained by G.I. Desalit by operating with an initial hydrogen pressure of 90 atmospheres and maintaining a temperature of 300-350° C. for two hours.

PRODUCTION OF PARAFFIN from oil derived from the Lispe oilfields in Hungary has now begun, according to local Press reports, and a high quality product has been obtained. The manufacturers are stated to be the Hungarian Petroleum Industry Co., the Shell Co., and the Vacuum Oil Company.

A NEW SYNTHETIC WAX has been developed in the U.S.A. under the name of Acrawax C. It has a melting point of 133-134° C. and is insoluble in water. It is soluble in hot toluene or naphtha as well as in turpentine and in general in hydrocarbon solvents. On cooling, these solutions produce a stable gel. The wax can be mixed with paraffin or other waxes.

FURTHER EXPANSION IN CONSUMPTION in the U.S.A. for miscellaneous uses and recovery in demand for foundry uses contributed to raise bentonite sales to new records in 1939, according to the Bureau of Mines, U.S. Department of the Interior. The 1939 output in the United States rose to 219,720 short tons valued at $1,702,393, from 192,783 tons and $1,373,182 in 1938. More than 43 per cent. of the 1939 total was used for filtering and decolorising oils, chiefly after activation with acid; another 16 per cent. was used by the petroleum and natural-gas industries in rotary oil-well drilling muds; and nearly 25 per cent. was employed in foundries and steel works. Increasing quantities of bentonite are employed for sealing dams and reservoirs, in soap making and for other miscellaneous applications.

ONE OF THE BIGGEST ENTERPRISES in Soviet ferrous metallurgy is nearing completion at Novo-Tagil, in the Urals. When it is completed, the annual output of the blast furnace shop will be approximately two million tons of pig iron. The steel furnaces are designed to turn out 1¾ million tons of steel a year, and the three rolling mills will be capable of producing 1,200,000 tons of sheet metal annually.

PRODUCTION HAS BEGUN in a Tokyo factory of a new plastic material marketed under the name of "Sonite." The product is manufactured from fibrous waste by the viscose process, and, according to its inventors, combines the plasticity of synthetic resins, the ductivity of celluloid, and the resistance of vulcanised fibres. The material has a resistance to traction of from 9 to 11 kg/mm², a density of from 1.3 to 1.5, and good insulating properties. It is also resistant to the action of acetone, benzene, mineral oils, etc.

THE BRAZILIAN GOVERNMENT has under construction at the Arsenal de Bom Successo two plants for the production of phosgene and mustard gas on a small scale. An experimental plant using German machinery and processes for the manufacture of chloracetophenone has been completed, but as yet is not believed to have been placed in operation. The Nitro-Chimica Brasileira, of S. Paulo, is reported to be producing about 14 tons of nitrocellulose per day; its capacity is stated to be considerably larger than this figure. It is rumoured, states a report from the office of the American Commercial Attaché, Rio de Janeiro, that they plan to diversify their activities in this and related products. The Government plant at Piquote, S. Paulo, is an outstanding unit in the production of both commercial and military explosives, as well as acids and other chemical products.

THE ARGENTINE FIRM OF "ELECTROCLOR," in which British, American and German chemical companies have an interest, together with the local paper factory Celulosa Argentina, has completed its first year of electrolytic chlor-alkali production. According to reports from the office of the American Commercial Attache in Buenos Aires, the output of Electroclor and Celulosa Argentina for the year ended November, 1939, was as follows, with quantities in metric tons: paper 6450, cellulose 20,700, hydrochloric acid 1200, caustic soda 1200, anhydrous ammonia 500, sodium hypochlorite 3000, liquid chlorine 330, salt 3500, chlorine gas 7000, electrolytic soda solution 7800, calcium hypochlorite 1050. While some of these items were consumed by Celulosa Argentina in connection with its paper-making activities, others were sold commercially.

Forthcoming Events

THE BRITISH CERAMIC SOCIETY will hold its annual general meeting at the North Staffordshire Technical College, Stoke-on-Trent, on June 18, at 4.30 p.m. The Refractory Materials Section and the Building Materials Section will hold technical sessions, starting at 10.45 a.m. (at the Grand Hotel, Hanley), and 11 a.m. (at the North Staffordshire Technical College) respectively. Luncheon will be followed by sectional council meetings. The Pottery Section will hold its meeting at the College at 4.15 p.m.

THE 208TH MEETING of the Society of Glass Technology will be held in Sheffield on June 19 at 2.30 p.m., but the arrangements are subject to cancellation at short notice. A general discussion will take place on "British Supplies of Glass-Making Sands." The presentation of his portrait to Professor Turner, postponed from April 17, will be made at 2 p.m.

PRELIMINARY ARRANGEMENTS are going forward in preparation for the meeting of the Food Group, Society of Chemical Industry, at Shinfield, Reading, on June 22, but if developments occur to render it undesirable to proceed with the meeting, prospective participants will be notified individually in good time. Members likely to attend are requested to notify the Hon. Secretary, Food Group, Society of Chemical Industry, Clifton House, Euston Road, London, N.W.1, immediately.

IT IS ANNOUNCED that the annual meeting of the Society of Chemical Industry, which is to take place at the Royal Institution, Albemarle Street, London, W.1, on July 9, will be of the most austere and formal character. There will be no official luncheon or dinner, and particulars of the programme will be announced later.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Companies Winding-Up

ALLIANCE CARBIDE COMPANY, LTD. (C.W.U., 15/6/40.) General meeting of members, 34 Victoria Street, London, S.W.1. on Friday, July 12, at 2 p.m.

BRISTOL CARBIDE COMPANY, LTD. (C.W.U., 15/6/40.) General meeting of members, 34 Victoria Street, London, S.W.1, on Friday July 12, at 3 p.m.

BRITISH ACETIC ACID COMPANY, LTD. (C.W.U., 15/6/40.) General meeting of members, 34 Victoria Street, London, S.W.1, on Friday, July 12, at 4 p.m.

Notice of Intended Dividend

FREEMAN, NAT HARRIS, Chartridge Grange, Chesham, Bucks. (N.I.D., 15/6/40.) Experimenting manufacturing chemist. Last day for receiving proofs, June 21. Trustee, Poland, John Langman, 29 Russell Square, London, W.C.1.

County Court Judgments

THORNTON, J. T. AND SONS (a firm), Atlantic Oil Works, Paddock. (C.C.J., 15/6/40.) Oil manufacturers. £13 12s. 8d. April 29.

Company News

Boots Pure Drug Co., Ltd., have declared a dividend for the quarter ending June 30, 1940, of 6 per cent., less tax, payable June 29.

Peter Brotherhood, Ltd., have declared a final dividend of 12 per cent., less tax, on the ordinarry shares, making 20 per cent., less tax, for the year (against 24 per cent.).

The Bradford Dyers' Association, Ltd., announce the payment of interest on the 4 per cent. debenture stock, as usual, on July 1. It has been decided to defer consideration of any payment on account of dividend on the 5 per cent. cumulative preference stock, pending settlement of the association's position relative to taxation. The preference dividend is paid to December 31, 1932.

The Morgan Crucible Co., Ltd., report a profit for the year to March 31, 1940, of £151,436, which compares with £253,477 over a fifteen-months' period recorded in the previous report. General reserve receives £71,934. With a final of 1s. 2d. per £1 stock total distribution is 8½ per cent., less tax, against 9 7-12 per cent. in the previous year. The carry-forward is £825, against £362. Meeting, Battersea Works, Battersea Church Road, S.W.11, June 18, at noon.

Chemical Trade Inquiries

Algeria.—An agent established at Algiers wishes to obtain the representation of United Kingdom manufacturers of chemicals, oils, waxes, gums, drugs, etc. (Ref. No. 360.)

Netherlands East Indies.—A firm of agents established at Batavia, Java, wishes to obtain the representation of United Kingdom manufacturers of pharmaceutical chemicals, laboratory glassware, etc. (Ref. No. 383.)

Argentina.—A firm of agents established at Buenos Aires wishes to obtain the representation, on a commission basis, of United Kingdom manufacturers of industrial and engineering products, especially those used in the manufacture of motor cars, paper and chemicals, for Argentina. (Ref. No. 387.)

New Companies Registered

E. H. Gregory and Company, Ltd. (361,733).—Private company. Capital £1000 in 1000 shares of £1 each. Resin, turpentine, etc., merchants, importers and exporters, etc. Subscribers: Cyril E. Balmforth, Harold Morland. Secretary: Cyril E. Balmforth. Registered office: Leadenhall House, 101 Leadenhall Street, E.C.

A. H. Ronan and Co., Ltd. (361,446.)—Private company. Capital £1000 in 1000 shares of £1 each. Merchants, brokers, importers and exporters, shippers, buyers of and dealers in chemicals and petroleum products, minerals, oils, lubricants, etc. Directors: Lt.-Col. Amos H. Ronan, Cecil G. Badrick and Ernest Cattle. Solicitors: Rexworthy, Bonser and Wadkin, 83 Cannon Street, E.C.4. Registered office: 83 Cannon Street, E.C.4.

Alfred J. Thompson, Ltd. (361,345).—Private company. Capital £10,000 in 10,000 shares of £1 each. To acquire, work and develop, beds, springs or other supplies of salt, brine or other substances; to supply brine and manufacture salt and other chemical products, etc. Subscribers: Herbert A. Manger, 57 Kingsland High Street, E.8, and John N. Manger. Remuneration: As fixed by the company. Solicitor: Geo. J. Dowse, 1 Kingsland High Street, E.8.

Guanex (Middlesex), Ltd. (360,824).—Private company. Nominal capital £31,000 in 30,000 5 per cent. cumulative preference shares of £1 and 20,000 ordinary shares of 1s. To enter into agreements with the County Council of Middlesex and Guanex Holdings, Ltd.; to conduct researches in and to treat sewage, sewage sludge, sewage residues and sludge, to manufacture, produce and extract therefrom fertilisers, manures and preparations for the enrichment of the soil, etc. Subscribers: Stephen J. Constance, 18 Austin Friars, E.C.2, Robert H. Gould, and Wm. Ritchie Solicitors: Slaughter and May, 18 Austin Friars, E.C.2.

Chemical and Allied Stocks and Shares

APART from a further contraction in the already small volume of business, Italy's entry into the war has had no important repercussions on general conditions on the Stock Exchange. Demand continued to be confined to British Funds, but there was little disposition to sell good-class industrial securities at current levels. The prevailing belief is that, in the event of a turn for the better in the war news, there would be an all-round marking up of values in the stock and share markets.

Securities of companies identified with the chemical and allied industries were fairly steady. Imperial Chemical at 26s. 9d. were slightly higher as compared with a week ago, while the preference units were unchanged at 31s. 9d. Dunlop Rubber had a firmer appearance around 30s., while in other directions Distillers were better at 56s. awaiting the forthcoming declaration of the final dividend. Triplex Glass were again a steady feature around 20s. current market hopes being that it may be possible to pay 15 per cent. on these 10s. shares for the financial year ending this month, on which basis the yield at the current price would be 7½ per cent.; for the previous year shareholders received 20 per cent. Among shares of other glass companies United Glass Bottle continued to be quoted at 47s. 6d., but were inactive, as were Forster's Glass 10s. ordinary, the quotation for which was 13s. 6d. Financial results of the last-named company, showing higher profits and the maintenance of the distribution at 11 per cent., created a good impression, as have the increased profits earned by Morgan Crucible. The 5½ per cent. first preference units of the last-named company were quoted at 22s. 6d. Key Glassworks were 52s. 6d. " ex " the interim dividend.

B. Laporte were around 51s. and the new ordinary shares, which were issued recently at 50s. were quoted at 7½d. premium. The 5s. ordinary units of Greeff-Chemicals Holdings were priced at 5s. 7½d. and Borax Consolidated deferred rallied from 23s. 9d. to 24s. 4½d. Elsewhere, British Drug Houses remained at 22s. 6d. and were firmly held, but in some other directions share values were affected by the recent Board of Trade order limiting the value of sales to retailers of a long list of goods. Boots Drug were 35s.xd. Timothy Whites 16s. 3d. and Sangers 19s. 3d. Beechams Pills deferred units transferred around 7s. 3d. Despite the good Guest Keen results, iron and steel securities were moderately lower in many cases, although subsequently Stewarts and Lloyds rallied to 33s. 9d. British Oxygen, British Aluminium and Metal Box had a relatively steady appearance, but Turner and Newall fluctuated, and at 57s. failed to hold all an earlier rally. British Match were 29s. 6d. and elsewhere Swedish Match remained a nominal market at 5s. British Plaster Board were relatively steady, these 5s. units being quoted at 8s. awaiting the results for the past year's working. Michael Nairn were little changed at 54s. 4½d., pending declaration of the interim dividend, due shortly. Lever and Unilever made the reduced price of 23s. 9d., and the preference units also moved against holders.

Pinchin Johnson at 16s. 9d. were within 3d. of the price ruling a week ago, but Lewis Berger were lower at 47s. 6d. Wall Paper deferred continued at 14s. 6d. United Molasses rallied from 19s. 6d. to 21s. 6d., and Imperial Smelting £1 units remained at 8s. 9d. Fison Packard were lower at 36s. 3d. due partly to deduction of the interim dividend from the price. Reckitt ordinary shares were marked down from 92s. 6d. to 88s. 9d. Moderately lower prices were made by the majority of textile shares, and Bleachers were unresponsive to the improved earnings shown by the results.

Oil shares were slightly lower in most cases. Anglo-Iranian, however, moved down from 50s. to 47s. 6d. and " Shell " were 55s. compared with 58s. 1½d. a week ago.

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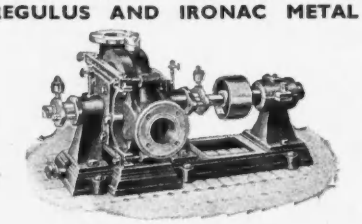

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